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EXAMINER

SANEI, HANA ASMAT

ART UNIT

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2889

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/743,782

Applicant(s)

PARK ET AL.

Examiner

Hana A. Sanei

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 49, 51-55, 57, 59 and 61-100 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 49, 51-55, 57 and 59 is/are allowed.
- 6) ☒ Claim(s) 61-100 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 10/31/07 has been entered.

Cancellation of claim(s) 1-48, 50, 56, 58, 60 has been entered.

Claim(s) 49, 51-55, 57, 59, 61-100 are pending in the instant application.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 110 been renumbered 100.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 69-71, 73, 75, 90, 95-100 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (JP 2001-325887) of prior record.

Regarding Claim 69, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of transparent electrodes (1a, 1b) and a plurality of bus electrodes (2a, 2b); each bus electrode being coupled to a corresponding transparent electrode and formed in a first direction (see Fig. 6), and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed in the first direction (portions of 18 are in the same direction as portions of 2) between adjacent bus electrodes (2a, 2b); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (1a, 1b) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a

"head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) within the discharge cell (16) includes two portions (left "link" part & right "link" part), each portion extending from a side of the third portion and having a length shorter than the length of the third portion (Fig. 6) and a width smaller than the second and third portions (refer again to Fig. 6).

Regarding Claim 70, Yoshida teaches a corner formed between the third ("head") portion and the fourth portion (the "link") has an angle near 90 degrees (see figure 6).

Regarding Claim 71, Yoshida teaches the fourth portion ("link") includes at least one linking portion overlapping a corresponding barrier rib (18) for connecting to a transparent electrode (1a, 1b) of an adjacent cell (16; see figure 6).

Regarding Claim 73, Yoshida teaches the barrier ribs (13; figure 3) are formed in the second direction (see figure 3).

Regarding Claim 75, Yoshida teaches the third portion has a largest length in the second direction compared to the first, second and fourth portions (see figure 6; the "second" direction being the direction address electrodes 7 are made; the "head" part is longer than the other parts of the transparent electrode).

Regarding Claim 90, Yoshida teaches the bus electrode (2a, 2b) is electrically connected to the first portion ("strip" part) near a central area of the first portion (see figure 6; paragraphs 25-26).

Regarding Claim 95, Yoshida teaches that each column of discharge cells (plurality of 15) in the second direction has adjacent discharge cells aligned in the second direction such that each column is a straight column of discharge cells (refer now to Fig. 13, applicant is claim that each "adjacent" cell is a straight column).

Regarding Claim 97, Yoshida teaches that a bus electrode (2) is not shared between adjacent rows (horizontal rows that do not correspond to the "first direction") of discharge cells formed in the first direction (Fig. 10)

Regarding Claim 96, Yoshida teaches that address electrodes (7, data electrodes) formed in the second direction do not overlap with barrier ribs (19) formed in the second direction (refer to Fig. 9, 11, where *some* address electrodes do not overlap).

Regarding Claim 98, Yoshida teaches that the black layers (18, refer now to Fig. 8) do not contact the transparent electrodes (1) or the bus electrodes (2).

Regarding Claim 99, Yoshida teaches that the width of the black layer (part of the width of the black layer, 18, refer now to Fig. 8) is greater than the width of the bus electrode (2).

Regarding Claim 100, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of transparent electrodes (1a, 1b) and a plurality of bus electrodes (2a, 2b); each bus electrode being coupled to a corresponding transparent electrode and formed in a first direction (see Fig. 6), and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed between adjacent bus electrodes (2a, 2b); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b); a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (1a, 1b) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part)

has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) within the discharge cell (16) includes two portions (left "link" part & right "link" part), each portion extending from a side of the third portion and having a length shorter than the length of the third portion (Fig. 6) and a width smaller than the second and third portions (refer again to Fig. 6), and address electrodes (7, data electrodes) formed in the second direction do not overlap with barrier ribs (19) formed in the second direction (refer to Fig. 9, 11, where *some* address electrodes do not overlap).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 61-68, 72, 74, 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2001-325887) in view of Amemiya (5640068) of prior record.

Regarding Claim 61, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of transparent electrodes (1a,1b) and a plurality of bus

electrodes (2a, 2b); each bus electrode being coupled to a corresponding transparent electrode and formed in a first direction (see Fig. 6), and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed in the first direction (portions of 18 are in the same direction as portions of 2) between adjacent bus electrodes (2a, 2b); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (1a, 1b) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth

portion (see Fig. 6), and (4) the fourth portion (a "link" part) has a width wider than that of the third portion, the widest width of the fourth portion within the discharge cell (16) is greater than a widest width of second portion and the third portion (see Fig. 6). Yoshida is silent regarding the shortest discharge gap.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having two facing fourth portions (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ([ge] = 90 microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the shortest discharge gap, as disclosed by Amemiya, in the PDP of Yoshida in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

Regarding claim 62, Yoshida teaches a corner formed between the third ("head" part) portion and fourth portion (the "link" part) has an angle near 90 degrees (see figure 6, the head part and the link part form a right angle).

Regarding claim 63, Yoshida teaches the fourth portion (the "link" part) includes at least one linking portion overlapping a corresponding barrier rib (18; figure 6) for connecting to a transparent electrode (1a, 1b) of an adjacent cell (16; see figure 6).

Regarding claim 65, Yoshida teaches the widest width of the first portion (not numbered; figure 6; the "strip" part of 1 a, 1 b) is less than a widest width of the second portion (the "expanding" part) and the third portion (the "head" part).

Regarding claim 66, Yoshida teaches the barrier ribs (13; figure 3) are formed in the second direction (see figures 3 and 6).

Regarding claim 68, Yoshida teaches the third portion (the "head") has a largest length in the second direction (the formation of the address electrodes 7) compared to the first (the "strip"), the second (the "expanding" part), and the fourth (the "link" part) portions (see figure 6, the "head" is longer in the direction of electrodes 7 than the rest).

Regarding claim 89, Yoshida teaches the bus electrode (2a, 2b) is electrically connected to the first portion ("strip" part) near a central area of the first portion (see figure 6; paragraphs 25-26).

Regarding Claim 64, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of transparent electrodes (1 a, 1b) and a plurality of bus electrodes (2a, 2b); each bus electrode being coupled to a corresponding transparent electrode and formed in a first direction (see Fig. 6), and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed in the first direction (portions of 18 are in the same direction as portions of 2) between adjacent bus electrodes (2a, 2b); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b); a

plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (1a, 1b) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) has a width wider than that of the third portion, the widest width of the fourth portion within the discharge cell (16) is greater than a widest width of second portion and the third portion (see Fig. 6). Yoshida is silent regarding a first distance between ends of transparent electrodes.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having a first distance between the ends of transparent electrodes (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) of the discharge cell (18,

Fig. 1) is 50 to 95 % of a pitch of the discharge cell (analogous equivalent to $[ge] = 90$ microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the first distance, as disclosed by Amemiya, in the PDP of Yoshida in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

Regarding Claim 67, Yoshida-Amemiya teaches that two facing fourth portions (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ($[ge] = 90$ microns, Col. 6, lines 33-37). Motivation to combine would be the same as stated in Claim 64.

Regarding Claim 72, Yoshida teaches the invention set forth above (see rejection in Claim 69 above). Yoshida is silent regarding a first distance between ends of transparent electrodes.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having a first distance between the ends of transparent electrodes (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) of the discharge cell (18, Fig. 1) is 50 to 95 % of a pitch of the discharge cell (analogous equivalent to $[ge] = 90$ microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to

emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the first distance, as disclosed by Amemiya, in the PDP of Yoshida in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

Regarding Claim 74, Yoshida teaches the invention set forth above (see rejection in Claim 69 above). Yoshida is silent regarding the shortest discharge gap.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having two facing fourth portions (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ($[ge] = 90$ microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the shortest discharge gap, as disclosed by Amemiya, in the PDP of Yoshida in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

3. Claims 76-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2001-325887) in view of Betsui et al (US 5825128).

Regarding Claim 76, Yoshida teaches the invention set forth above (see rejection in Claim 69 above). Yoshida fails to teach the barrier ribs having at least an angle different from 90.

In the same field of endeavor of barrier ribs, Betsui teaches a plasma display panel (see at least Fig. 3) having a barrier ribs (29, separation walls) forming the discharge cells (30) include a portion having at least an angle different from 90 degrees with respect to the bus electrode (42) in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells (Col. 2, lines 32-35).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the barrier ribs, as disclosed by Betsui, in the PDP of Yoshida in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells

Regarding Claim 77, Yoshida-Betsui teaches that the angle is greater than 0 and less than 90 degrees (45 degrees, see Fig. 3).

Regarding Claim 78, Yoshida-Betsui teaches that the angle is greater than 90 and less than 180 degrees (135 degrees, Fig. 3)

4. Claims 79-88, 91-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (JP 2001-325887) in view of Betsui et al (US 5825128) in further view of Amemiya (5640068).

Regarding Claim 79, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of transparent electrodes (1 a, 1b) and a plurality of bus

electrodes (2a, 2b); each bus electrode being coupled to a corresponding transparent electrode and formed in a first direction (see Fig. 6), and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate, each black layer (18) being formed in the first direction (portions of 18 are in the same direction as portions of 2) between adjacent bus electrodes (2a, 2b); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (1a, 1b) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth

portion (see Fig. 6), and (4) the fourth portion (a "link" part) within the discharge cell (16) includes two portions (left "link" part & right "link" part), each portion extending from a side of the third portion and having a length shorter than the length of the third portion (Fig. 6) and a width smaller than the second and third portions (refer again to Fig. 6).

Yoshida fails to teach the barrier ribs having at least an angle different from 90.

In the same field of endeavor of barrier ribs, Betsui teaches a plasma display panel (see at least Fig. 3) having a barrier ribs (29, separation walls) forming the discharge cells (30) include a portion having at least an angle different from 90 degrees with respect to the bus electrode (42) in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells (Col. 2, lines 32-35).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the barrier ribs, as disclosed by Betsui, in the PDP of Yoshida in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells. Yoshida-Betsui is silent regarding the shortest discharge gap.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having two facing fourth portions (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ([ge] = 90 microns, Col. 6, lines

33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the shortest discharge gap, as disclosed by Amemiya, in the PDP of Yoshida-Betsui in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

Regarding Claim 80, Yoshida-Betsui teaches that the angle is greater than 0 and less than 90 degrees (45 degrees, see Fig. 3).

Regarding Claim 81, Yoshida-Betsui teaches that the angle is greater than 90 and less than 180 degrees (135 degrees, Fig. 3)

In regard to claim 82, Yoshida teaches a corner formed between the third ("head") portion and the fourth portion (the "link") has an angle near 90 degrees (see figure 6).

In regard to claim 83, Yoshida ('887) teaches the fourth portion ("link") includes at least one linking portion overlapping a corresponding barrier rib (18) for connecting to a transparent electrode (1a, 1b) of an adjacent cell (16; see figure 6).

Regarding Claim 84, Yoshida teaches an upper substrate (10; see at least Fig. 3; [0025]) having a plurality of transparent electrodes (1a, 1b) and a plurality of bus electrodes (2a, 2b); each bus electrode being coupled to a corresponding transparent electrode and formed in a first direction (see Fig. 6), and a plurality of black layers (18; Fig. 6; [0034]) formed on the upper substrate (10), each black layer (18) being formed

between adjacent bus electrodes (2a, 2b); a lower substrate (11) facing the upper substrate by a prescribed distance (see Fig. 3), the lower substrate having a plurality of address electrodes (7; Fig. 2; [0027]) formed in a second direction different from the first direction such that the address electrodes (7) cross the bus electrodes (2a, 2b), a plurality of barrier ribs (13; Fig. 2; [0026]) forming discharge cells (15; [0036]), and a phosphor material (14R, 14G, 14B; [0026]) being formed between the barrier ribs (13), wherein at least one transparent electrode (1a, 1b) comprises first (described as a "strip" part above), second (described as an "expanding" part above), third (described as a "head" part above), and fourth (described as a "link" part above) portions, wherein (1) the first portion ("strip" part) has a width narrower than the second, third and fourth portions (see Fig. 6), the first portion being extended to the second portion ("expanding" part) and electrically coupled to the bus (2a, 2b) electrode (see Fig. 6), and a narrowest width of the first portion is less than a widest width of the second portion, the third portion and the fourth portion (see Fig. 6), (2) the second portion (an "expanding" part) has a width which enlarges toward a center of a discharge cell, and the second portion is extended to the third portion (see Fig. 6), (3) the third (a "head" portion) portion has at least a substantially constant width, a widest width of the third portion is greater than a narrowest width of the second portion, and the third portion is extended to the fourth portion (see Fig. 6), and (4) the fourth portion (a "link" part) within the discharge cell (16) includes two portions (left "link" part & right "link" part), each portion extending from a side of the third portion and having a length shorter than the length of the third portion

(Fig. 6) and a width smaller than the second and third portions (refer again to Fig. 6).

Yoshida fails to teach the barrier ribs having at least an angle different from 90.

In the same field of endeavor of barrier ribs, Betsui teaches a plasma display panel (see at least Fig. 3) having a barrier ribs (29, separation walls) forming the discharge cells (30) include a portion having at least an angle different from 90 degrees with respect to the bus electrode (42) in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells (Col. 2, lines 32-35).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the barrier ribs, as disclosed by Betsui, in the PDP of Yoshida in order to achieve a sharp color display of long life without ruining the easiness of its fabrication and the driving of the cells. Yoshida-Betsui is silent regarding a first distance between ends of transparent electrodes.

In the same field of endeavor discharge gaps between opposing, confronting transparent electrodes, Amemiya teaches plasma display panel (see at least Fig. 7A) having a first distance between the ends of transparent electrodes (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) of the discharge cell (18, Fig. 1) is 50 to 95 % of a pitch of the discharge cell (analogous equivalent to $[ge] = 90$ microns, Col. 6, lines 33-37) in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power (Col. 1, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the first distance, as disclosed by Amemiya, in the PDP of Yoshida-Betsui in order to ensure a high emitting efficiency and ability to emit a bright light while performing a discharge with a relatively small consumption power.

In regard to claim 85, Yoshida ('887) teaches a widest width of the first portion ("strip" part) is less than a widest width of the second ("expanding" part) and the third ("head") portion (see figure 6).

In regard to claim 86, Yoshida ('887) teaches the barrier ribs (13; figure 3) are formed in the second direction (see figure 3).

Regarding Claim 87, Yoshida-Amemiya teaches plasma display panel (see at least Fig. 7A) having two facing fourth portions (in this case it would be the "projecting portions" 32 of Amemiya, Col. 3, lines 12-16) within the discharge cell (18, Fig. 1) that form a shortest discharge gap within a range of about 50 to 100 microns ($[ge] = 90$ microns, Col. 6, lines 33-37).

In regard to claim 88, Yoshida teaches the third portion has a largest length in the second direction compared to the first, second and fourth portions (see figure 6; the "second" direction being the direction address electrodes 7 are made; the "head" part is longer than the other parts of the transparent electrode).

In regard to claims 89 and 91, Yoshida teaches the bus electrode (2a, 2b) is electrically connected to the first portion ("strip" part) near a central area of the first portion (see figure 6; paragraphs 25-26).

Regarding Claim 92, Yoshida-Betsui-Amemiya teaches that the shortest discharge gap (ge, Fig. 6) is within the range of **about** 60 to 90 microns (ge =70 microns, Col. 5, lines 45-51).

Regarding Claim 93, Yoshida-Betsui-Amemiya teaches that the shortest discharge gap (ge, Fig. 6) is within the range of **about** 70 to 80 microns (ge =70 microns, Col. 5, lines 45-51).

Regarding Claim 94, Yoshida-Betsui-Amemiya teaches that the shortest discharge gap (ge, Fig. 6) is within the range of **about** 74 to 78 microns (ge =70 microns, Col. 5, lines 45-51).

Allowable Subject Matter

A. Claims 49, 51 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a plasma display panel, comprising: a transparent electrode pair spaced with a predetermined gap therebetween within a discharge cell, at least one transparent electrode of said transparent electrode pair including: an expanding part having a width which enlarges towards a center of the discharge cell, and a head part connected to the expanding part and having at least a substantially constant width; a barrier rib for dividing the discharge cell with an adjacent discharge cell; a metal electrode formed in a first direction, and electrically coupled to the expanding part; an address electrode provided in parallel to the barrier rib in a second direction different from the first direction such that the address electrode crosses the

metal electrode; and a link overlapping the barrier rib for connecting to a transparent electrode of the adjacent discharge cell.

However, the prior art of record neither shows nor suggests a motivation for wherein said link is formed at a predetermined depth extending from an end of the head part toward the expanding part, wherein said predetermined depth is approximately 100 microns to 200 microns as set forth in Claim 49.

Claim 51 is allowable because of their dependency status from claim 49.

B. Claims 52-54 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a plasma display panel, comprising: a transparent electrode pair spaced with a predetermined gap therebetween within a discharge cell, at least one transparent electrode of said transparent electrode pair including: an expanding part having a width which enlarges towards a center of the discharge cell, and a head part connected to the expanding part and having at least a substantially constant width; a barrier rib for dividing the discharge cell with an adjacent discharge cell; a metal electrode formed in a first direction, and electrically coupled to the expanding part; an address electrode provided in parallel to the barrier rib in a second direction different from the first direction such that the address electrode crosses the metal electrode; and a link overlapping the barrier rib for connecting to a transparent electrode of the adjacent discharge cell.

However, the prior art of record neither shows nor suggests a motivation for wherein said link is formed at a predetermined depth extending from an end of the head part toward the expanding part as set forth in Claim 52.

Claims 53-54 are allowable because of their dependency status from claim 52.

C. Claim 55 is allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a first transparent electrode having a first head part protruding from one side of a discharge cell into a center of the discharge cell, and a first strip part connected to the first head part; and a second transparent electrode which includes an expanding part having a larger width as it goes from the other side thereof within the discharge cell into the center of the discharge cell in such a manner to be spaced by a predetermined gap from the first transparent electrode within the discharge cell, and a second head part connected to the expanding part and having a substantially constant width, and a second strip part connected to the expanding part; a first metal electrode connected to the first strip part and a second metal electrode connected to the second strip part, the first and second metal electrodes being formed in a first direction; a barrier rib for dividing the discharge cell from an adjacent discharge cell; an address electrode provided in a second direction different from the first direction such that the address electrode crosses the first and second metal electrodes; a first link overlapping the barrier rib for connecting to a transparent electrode of the adjacent discharge cell, the first link being formed at a first predetermined depth extending from an end of the first part toward the first strip part;

and a second link overlapping the barrier rib for connecting to another transparent electrode of the adjacent discharge cell, the second link being formed at a second predetermined depth extending from an end of the second head part toward the expanding part

However, the prior art of record neither shows nor suggests a motivation for each of the first and the second predetermined depths is approximately 10 microns to 200 microns as set forth in Claim 55.

D. Claim 57 is allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a plasma display panel, comprising: sustain electrode pair including a transparent electrode pair spaced with a predetermined gap therebetween within a discharge cell, and a first metal electrode connected to one of the transparent electrode pair and a second metal electrode coupled to other one of the transparent electrode pair, the first and second metal electrodes being formed in a first direction, at least one transparent electrode of said transparent electrode pair including: a neck part connected to the metal electrode, an expanding part connected to the neck part and having a width which enlarges as it goes into a center of the discharge cell, and a head part connected to the expanding part and having a substantially constant width; a barrier rib for dividing the discharge cell from an adjacent discharge cell and formed in a first direction; an address electrode provided in a second direction different from the first direction such that the address electrode crosses the first and second metal electrodes; and a link overlapping the barrier rib for connecting to a

transparent electrode of said adjacent discharge cell, wherein the link is formed at a predetermined depth extending from an end of the head part toward the expanding part.

However, the prior art of record neither shows nor suggests a motivation for the predetermined depth is approximately 10 microns to 200 microns as set forth in Claim 57.

E. Claim 59 is allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a plasma display panel, comprising: a pair of transparent electrodes having a predetermined gap therebetween within a discharge cell, wherein at least one of said transparent electrodes includes: a stripe part, a head part protruding from the stripe part into a center of the discharge cell, and adjacent cell; a link overlapping a barrier for connecting to a transparent electrode of an a metal electrode connected to the stripe part and formed in a first direction; and an address electrode provided in a second direction crossing the metal electrode, wherein said link is formed at a predetermined depth extending from an end of the head part toward an expanding part.

However, the prior art of record neither shows nor suggests a motivation for predetermined depth is approximately 10 microns to 200 microns as set forth in Claim 59.

Response to Arguments

Applicant's arguments filed on 10/31/07 have been fully considered but they are not persuasive.

A. In response to Applicant's arguments that Yoshida (JP 2001-325887) does not teach each black layer being formed in a first direction between the adjacent bus electrodes, the Examiner respectfully disagrees.

Yoshida does indeed teach that each black layer being formed in a first direction between the adjacent bus electrodes. While the black layers ("the skewer-like protection-from-light section 18 which mixed lead content frit glass and black pigment powder," [0034]), of Yoshida, may be formed directly underlying the bus electrode (2a, 2b), alternate corresponding black layers fall between "adjacent" bus electrodes. The language employed to describe the Applicant's invention is not limiting enough in the concise depiction of the locality of the black layers. Essentially, as long as at least one black layer falls within at least two of the bus electrodes, then the limitation is met via technicality.

As a suggestion to overcome the discrepancy, Examiner suggests describing each black layer being formed/arranged between a first and second bus electrode, thereby mandating that the preservation of the black layer between respective bus electrodes, thereby eliminating the ambiguity in the current claim language.

For the reasons stated above, the rejection of the claims is deemed proper.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hana A. Sanei whose telephone number is (571)-272-8654. The examiner can normally be reached on Monday- Friday, 9 am - 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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